

transparent base plate having a thickness of t_1 and a second optical information recording medium including a second transparent base plate having a thickness of t_2 ($t_2 > t_1$), comprising:

(a first light source to emit a first light flux having a wavelength of λ_1 ;
a second light source to emit a second light flux having a wavelength of λ_2 ($\lambda_1 < \lambda_2$);

a converging optical system to converge the first light flux or the second light flux onto a first information recording surface of the first optical information recording medium or a second information recording surface of the second optical information recording medium, the converging optical system having an objective lens; and

an optical detector to receive reflected light from the first optical information recording medium or the second optical information recording medium;

wherein the converging optical system comprises a diffracting section on an almost entire surface in an effective aperture of at least one surface thereof,

the converging optical system generates an m -th order diffracted light ray (m being an integer other than zero) more than other order diffracted light rays when the first light flux passes the diffracting section and converges the m -th order diffracted light ray onto the first information recording surface so as to conduct the reproducing and/or recording information of the first optical information recording medium;

the converging optical system generates an n -th order diffracted light ray (n being an integer other than zero) more than other order diffracted light rays when the second light flux passes the diffracting section and converges the n -th order diffracted light ray

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onto the second information recording surface so as to conduct the reproducing and/or recording information of the second optical information recording medium; and

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a spherical aberration has at least one substantially discontinuous portion when the converging optical system converges the second light flux onto the second information recording surface so as to conduct reproducing and/or recording the information of the second optical information recording medium.

22. (Amended) An objective lens for use in an optical pickup apparatus to conduct reproducing and/or recording information of an optical information recording medium having a transparent base plate, comprising:

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at least one surface;

wherein a diffracting section is provided on an almost entire surface of an effective aperture of the surface, wherein when a light flux having a predetermined wavelength passes the diffracting section, the objective lens generates an m-th order diffracted light ray (m being an integer other than zero) more than other order light rays and when the m-th order diffracted light ray is converged through a transparent base plate having a predetermined thickness, a spherical aberration has at least one substantially discontinuous portion.

23. (Amended) The objective lens of claim 22, herein the optical pickup apparatus conducts reproducing and/or recording information of a first optical information recording medium including a first transparent base plate having a thickness ✓

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of t1 and a second optical information recording medium including a second transparent base plate having a thickness of t2 ($t_2 > t_1$),

when a first light flux having a wavelength of λ_1 passes the diffracting section, the objective lens generates the m-th order diffracted light ray (m being an integer other than zero) more than other order diffracted light rays and converges the m-th order diffracted light rays onto a first information recording surface so that the optical pickup apparatus conducts the reproducing and/or recording information of the first optical information recording medium;

when a second light flux having a wavelength of λ_2 ($\lambda_1 < \lambda_2$) passes the diffracting section, the objective lens generates an n-th order diffracted light ray (n being an integer other than zero) more than other order diffracted light rays and converges the n-th order diffracted light rays onto a second information recording surface so that the optical pickup apparatus conducts the reproducing and/or recording information of the second optical information recording medium; and

when the objective lens converges the second light flux onto the second information recording surface, a spherical aberration has at least one discontinuous portion or at least one substantially discontinuous portion.

36. (Amended) An optical information reproducing and/or recording apparatus to conduct reproducing and/or recording information of a first optical information recording medium including a first transparent base plate having a thickness of t1 and a second optical information recording medium including a second transparent base plate having a thickness of t2 ($t_2 > t_1$), comprising:

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an optical pickup apparatus comprising:

a first light source to emit a first light flux having a wavelength of λ_1 ;

a second light source to emit a second light flux having a wavelength of λ_2 ($\lambda_1 < \lambda_2$);

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a converging optical system to converge the first light flux or the second light flux onto a first information recording surface of the first optical information recording medium or a second information recording surface of the second optical information recording medium, the converging optical system having an objective lens; and

an optical detector to receive reflected light from the first optical information recording medium or the second optical information recording medium;

wherein the converging optical system comprises a diffracting section on an almost entire surface in an effective aperture of at least one surface thereof,

the converging optical system generates an m-th order diffracted light ray (m being an integer other than zero) more than other order diffracted light rays when the first light flux passes the diffracting section and converges the m-th diffracted light ray onto the first information recording surface so as to conduct the reproducing and/or recording information of the first optical information recording medium;

the converging optical system generates an n-th order diffracted light ray (n being an integer other than zero) more than other order diffracted light rays when the second light flux passes the diffracting section and converges the n-th diffracted light ray onto

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